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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,579	02/09/2004	Ferdinando Bruno	NA-1219-CIP 2	5866

7590 05/31/2005  
U.S. Army Soldier Systems Center  
15 Kansas Street  
Natick, MA 01760

EXAMINER

TRUONG, DUC

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/775,579	<b>Applicant(s)</b> BRUNO ET AL	
	<b>Examiner</b> Duc Truong	<b>Art Unit</b> 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuelson et al in view of Akkara et al (Hematin catalyzed polymerization of phenol compounds), both of record on 1449.

The Samuelson reference discloses enzymatic template polymerization in that a redox monomer such as aniline or phenols is combined with a template and an enzyme to form a reaction mixture wherein the redox monomer aligns along the template to form a complex and polymerizes (see col. 3, lines 42-47).

Under conditions, the monomer associates with the template and then upon addition of enzyme (peroxidase) and initiator (hydrogen peroxide) the polymerization proceeds---(see col. 3, lines 8-15) in that preferred enzyme is horseradish peroxidase (see col. 4, line 7).

Note that the template can be a polyelectrolyte (see col. 4, line 37), polycation (see col. 4, line 36).

The disclosure of the reference differs from the instant claims in that it does not disclose the claimed assembled hematin related to a polyelectrolyte nor specific cationic polymer.

However, the reference does disclose the enzymatic template polymerization in that the enzyme includes horseradish peroxidase and the template includes polyelectrolyte, polycation.

The Akkara reference does disclose the horseradish peroxidase, an enzyme utilizes a heme-iron factor to interact with the peroxide, yielding an oxidized heme-iron complex I and a further heme-iron complex II (see Figure 2) to polymerize phenols and aromatic anilines---.

It would have been obvious to one of ordinary skill in the art to employ the heme-iron complex, as disclosed in Akkara, as horseradish peroxidase, to associate with the template, as disclosed in Samuelson, in order to gain the advantages of the combination of the references, that being the products, undergo oxidative dehydrogenation reactions catalyzed by an enzyme, thereby enabling the modification of polyphenol properties (see Akkara, page 2377, Introduction).

Samuelson reference discloses a method of polymerizing an aromatic monomer using a template and an enzyme such as horseradish peroxidase but it does not determine what it is.

Akkara determines that horseradish peroxidase derived from hematine derivatives.

The determination of said horseradish to be hematine derivative to be associate with the template such as polyelectrolyte, cationic polymer would not provide an unexpected result to one of ordinary skill in the art.

Note that specific cationic polymer in claims 3-4 are included in the broad polycation, as disclosed at col. 4, line 36 of the Samuelson reference. Therefore, it would have

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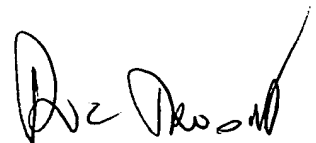
been obvious to one of ordinary skill in the art to select the polycation from the Samuelson reference within the limitations of claims 3-4 to form the claimed product in the absence of any showing of unexpected results derived from said selection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Truong whose telephone number is 571-272-1081. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DUCTRUONG  
PRIMARY EXAMINER